(2) A limitation generally from claim 16 has been incorporated into claim 14.

(3) Claim 39 has been amended to include the limitations of claims 40 and 42.

(4) The dependency of claims has been altered, if necessary, to reflect changes made.

(5) Claim 42 has been added, similar to claim 20.

(6) Claims 24-32 have been appended herein. These claims were previously subject to a restriction requirement. However, these claims appear to clearly fit with the instant claim set. They do not read on Figures 3A and 3D, but they do read on Figures 10A, 10B, 11A-11H. Claims 12 and 14 and 21 and 39 are generic.

Preliminary Discussion of Reference Klein

In regard to the prior rejection of claims over reference Klein, a short contrast of Klein and applicant is fruitful.

Any superficial similarity can be dispelled by noting that Klein and applicant address different "proportioning" problems. Although they both use the term "proportioning", they are addressing different situations.

Klein addresses the problem of efficiently and effectively switching between a 3% foam to a 1% foam or a 6% foam to a 10% foam, or the like. This problem is solved for Klein by providing adjustable stops or shoulders in his mixing valve so that an operator can manually set the size of an orifice to correspond to the foam concentrate source (1%, 3%, 6%, 10%, etc.). Neither Klein, nor Klein's references, however, address the problem of proportioning a given foam concentrate into a variably flowing conduit while maintaining a preselected or predetermined pressure drop across the orifice.

Applicant, in contrast, given a foam concentrate source (be it 1% or 3% or 6% or 10% or the like), is concerned with maintaining the correct proportion of this foam concentrate when fluid flow rate varies and while maintaining a predetermined pressure drop across an orifice

proximate to which the foam is metered in. Thus, although Klein and applicant both use the term "proportioning", they are using it in different senses, to address different problems, and in distinction from the Klein references, applicant maintains a predetermined or preselected pressure drop across an orifice, and/or controls discharge pressure out of a nozzle.

The first element of claim 12 includes "adjusting...to maintain a predetermined pressure drop across the orifice...". In neither the first nor subsequent Action has the Examiner pointed to any teaching or disclosure in Klein "to maintain a predetermined pressure drop across the orifice". Application finds no such "adjustment" in Klein or in the references cited in Klein. Applicant submits, therefore that a *prima facie* case has not been made and that allowance is appropriate for claim 12 without further traversal or discussion.

Similarly claim 14 recites "setting a pilot valve to maintain one or more preselected pressure drops across the orifice". Claim 14 and those that depend thereon are allowable for the same reason as claim 12 above, namely no teaching in Klein or his references for maintaining a predetermined pressure drop.

Similarly, claim 20 recites "automatically adjusting a fire fighting nozzle to control discharge pressure;" and claim 21 recites automatically adjusting an obstruction to maintain a preselected pressure drop. Not only does Klein not teach or suggest a fire fighting nozzle, Klein and his references do not discuss automatically adjusting to control water discharge pressure, and Klein and his references do not teach automatically adjusting an obstruction to maintain a preselected pressure drop. Claims 20 and 21 are thus allowable.

Neither Klein nor Klein's references teach adjusting a water orifice to maintain a predetermined pressure drop as the water flow rate varies, or maintaining a fixed pressure drop in a firefighting conduit, or setting a pilot valve to maintain a preselected pressure drop.

Reconsideration and further examination is respectfully requested.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Sue Z. Shaper, Applicants' Attorney at 713 550 5710 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

It is believed that no further request for extension of time or fees are due. Notwithstanding, the Commissioner is authorized to charge any additional fees incurred or credit any overage to Deposit Account No.50-1753 (0110SS-44500). Please regard this as a further request for extension of time to the extent one is needed.

Respectfully Submitted,

11/15/02
Date

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I hereby certify that this is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated below and is addressed to:

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12. A method for proportioning a fire fighting chemical into variably flowing fire fighting fluid , comprising:

adjusting a fire fighting fluid orifice in a fire fighting fluid conduit to maintain a predetermined pressure drop across the orifice as fire fighting fluid flow rate through the conduit varies;

varying a fire fighting foam concentrate orifice in concert with the adjustment of the fire fighting fluid orifice; and

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supplying fire fighting foam concentrate through the concentrate orifice into the fire fighting fluid proximate a pressure drop such that a ratio of the foam concentrate proportioned into the fire fighting fluid flowing through the conduit, to the fluid, remains approximately constant.

13. The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting a lateral movement of a baffle within the conduit

14. A method for automatically proportioning foam into variably flowing fire fighting fluid, comprising:

varying a fire fighting fluid orifice in a conduit to maintain a preselected pressure drop in the conduit and wherein the varying fire fighting fluid orifice acts as a fire fighting fluid flow rate indicator;

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varying a foam concentrate orifice, at a rate calibrated in concert with variations of the fire fighting fluid orifice; and

discharging foam concentrate through the variable foam concentrate orifice proximate a low pressure zone created by a pressure drop at an approximately constant ratio to the fluid.

15. The method of claim 14 that includes varying the fire fighting fluid orifice based upon a spring resisting fire fighting fluid pressure in the conduit.

16. The method of claim 14 wherein varying the fire fighting fluid orifice includes setting a pilot valve to maintain one or more pre-selected pressure drops across the orifice.

17. The method of claim 16 wherein the pilot valve is biased by spring.

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18. The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting a lateral movement of a piston within the conduit.

20. A method comprising:

automatically adjusting a fire fighting nozzle to control discharge pressure;

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self-educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 500 gpm through the nozzle; and

automatically varying a foam proportioning orifice in order to meter foam concentrate self-educted into the nozzle in accordance with fire fighting fluid flow rate through the nozzle

39. Method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing pressurized foam concentrate in communication with pressurized fire fighting fluid variably flowing through a conduit;

arranging a pilot valve sensitive to flow rate of the fire fighting fluid in the conduit;

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adapting the pilot valve to adjust a flow rate of foam concentrate into the fire fighting fluid such that the foam concentrate is proportionally metered into the variably flowing fire fighting fluid;

adapting the pilot valve to vary an obstruction to flow of fire fighting fluid in the conduit; and

varying the obstruction by the pilot valve to maintain a fixed pressure drop in the fire fighting fluid conduit.

41. The method of claim 39 that includes measuring pressure drop around the obstruction.

42. A method comprising:

automatically adjusting an obstruction in a fire fighting fluid conduit flowing at least 500 gpm to maintain a preselected pressure drop;

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arranging a pilot valve sensitive to fire fighting fluid flow rate in the conduit; and

proportionally metering, using the pilot valve, a foam concentrate into the conduit proximate the pressure drop.

43. The method of claim 39 that includes adjusting a flow rate of foam concentrate by adjusting an orifice in a foam concentrate flow conduit.

24. A method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing a pressurized foam concentrate conduit in fluid communication with a pressurized fire fighting fluid conduit remote from a fire fighting fluid discharge nozzle;

varying a first orifice in the fire fighting fluid conduit to maintain a pre-determined pressure drop in said conduit of a value less than a fire fighting fluid discharge pressure drop; and

varying in concert with the first orifice a second orifice in the foam concentrate conduit such that foam concentrate is proportioned into the fire fighting fluid.

25. The method of claim 24 wherein the first orifice is varied to maintain a pressure drop of less than approximately 25psi.

26. The method of claim 25 wherein the first orifice is varied to maintain a pressure drop of approximately 15psi.

27. The method of claim 24 that includes pressurizing foam concentrate into the fire fighting fluid at a pressure distinct from the pressurizing of the fire fighting fluid conduit.

28. The method of claim 24 that includes varying a first orifice to maintain a relatively constant pressure drop in the fire fighting fluid conduit using a pilot valve.

29. The method of claim 24 that includes pressurizing foam concentrate in the foam concentrate conduit at a level commensurate with the pressurizing of the fire fighting fluid in the fire fighting fluid conduit.

30. The method of claim 25 that includes proportioning foam concentrate into the fire fighting fluid proximate the pressure drop.

31. The method of claim 25 that includes utilizing a pilot valve to create a deluge valve.

32. The method of claim 24 that includes educting, at least in part, foam concentrate into the fire fighting fluid.

Mark-Up Claims for RCE

12. A method for proportioning a fire fighting [concentrate] chemical into variably flowing fire fighting fluid , comprising:

adjusting a fire fighting fluid orifice in a fire fighting fluid conduit to maintain a predetermined pressure drop across the orifice as fire fighting fluid flow rate through the conduit varies;

varying a fire fighting foam concentrate orifice in concert with the adjustment of the fire fighting fluid orifice; and

supplying fire fighting foam concentrate through the concentrate orifice into the fire fighting fluid proximate a pressure drop such that a ratio of the foam[ing] concentrate proportioned into the fire fighting fluid flowing through the conduit, to the fluid, remains approximately constant.

13. The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting [the] a lateral movement of a baffle within the conduit

14. A method for automatically proportioning foam into variably flowing fire fighting fluid, comprising:

varying a fire fighting fluid orifice in a conduit[, thereby creating a] to maintain a preselected pressure drop in the conduit and wherein the varying fire fighting fluid orifice acts as a fire fighting fluid flow rate indicator;

varying a foam concentrate orifice, at a rate calibrated in concert with variations of the fire fighting fluid orifice; and

discharging foam concentrate through the variable foam concentrate orifice proximate a low pressure zone created by a pressure drop at an approximately constant ratio to the fluid.

15. The method of claim 14 that includes varying the fire fighting fluid orifice based upon a spring resisting fire fighting fluid pressure in the conduit.

16. The method of claim 14 wherein varying the fire fighting fluid orifice includes setting a pilot valve to maintain one or more pre-selected pressure drops across the orifice.

17. The method of claim 16wherein the pilot valve is biased by spring.

18. The method of claim 14 wherein varying a fire fighting fluid orifice includes adjusting [the] a lateral movement of a piston within the conduit.

20. A method [for] comprising:

automatically adjusting a fire fighting nozzle to control discharge pressure;

self-educting fire fighting foam concentrate into the nozzle using a portion of a fire fighting fluid flowing at at least 500 gpm through the nozzle; and

automatically varying a foam proportioning orifice in order to meter foam concentrate self-educted into the nozzle in accordance with fire fighting fluid flow rate through the nozzle

39. Method for proportioning foam concentrate into a variable flow fire fighting fluid conduit, comprising:

placing pressurized foam concentrate in communication with pressurized fire fighting fluid variably flowing through a conduit;

arranging a pilot valve sensitive to flow rate of the fire fighting fluid in the conduit;

adapting the pilot valve to adjust a flow rate of foam concentrate into the fire fighting fluid such that the foam concentrate is proportionally metered into the variably flowing fire fighting fluid;

adapting the pilot valve to vary an obstruction to flow of fire fighting fluid in the conduit; and

varying the obstruction by the pilot valve to maintain a fixed pressure drop in the fire fighting fluid conduit.

41. The method of claim 39 that includes measuring pressure drop around the obstruction.

42. [The method of claim 40 that includes varying the obstruction by the pilot valve to maintain a fixed pressure drop in the fire fighting fluid conduit.] A method comprising:

automatically adjusting an obstruction in a fire fighting fluid conduit flowing at least 500 gpm to maintain a preselected pressure drop;

arranging a pilot valve sensitive to fire fighting fluid flow rate in the conduit; and

proportionally metering, using the pilot valve, a foam concentrate into the conduit proximate the pressure drop.

43. The method of claim 39 that includes adjusting a flow rate of foam concentrate by adjusting an orifice in a foam concentrate flow conduit.